



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/037,479

10/24/2001

Roger A. Bethard

1376.689US1

5205

21186

7590

01/31/2006

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH
1600 TCF TOWER
121 SOUTH EIGHT STREET
MINNEAPOLIS, MN 55402

EXAMINER

KIM, HONG CHONG

ART UNIT

PAPER NUMBER

2185

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/037,479

Applicant(s)

BETHARD, ROGER A.

Examiner

Hong C. Kim

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 28 and 29 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/27/05</u> | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. Claims 1-8 and 28 and 29 are presented for examination. This office action is in response to the amendment filed on 12/27/05.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12/27/2005 is being considered by the examiner.

The examiner requests, in response to this Office action, any reference(s) known to qualify as prior art under 35 U.S.C. sections 102 or 103 with respect to the invention as defined by the independent and dependent claims. That is, any prior art (including any products for sale) similar to the claimed invention that could reasonably be used in a 102 or 103 rejection. This request does not require applicant to perform a search. This **request** is not intended to interfere with or go beyond that **required** under 37 C.F.R. 1.56 or 1.105.

The request may be fulfilled by asking the attorney(s) of record handling prosecution and the inventor(s)/assignee for references qualifying as prior art. A simple statement that the query has been made and no prior art found is sufficient to fulfill the request. Otherwise, the fee and certification requirements of 37 CFR section 1.97 are waived for those documents submitted in reply to this request. This waiver extends only to those documents within the scope of this request that are included in the application's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this request and any information

disclosures beyond the scope of this are subject to the fee and certification requirements of 37 CFR section 1.97.

In the event prior art documentation is submitted, a discussion of relevant passages, figs. etc. with respect to the claims is requested. The examiner is looking for specific references to 102/103 prior art that identify independent and dependent claim limitations. Since applicant is most knowledgeable of the present invention and submitted art, his/her discussion of the reference(s) with respect to the instant claims is essential. **A response to this inquiry is greatly appreciated.**

The examiner also requests, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line number(s), in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “two or more memory sections” and the “each memory section includes two or more TLBs” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 3 & 28 and 4 & 29 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It appears that claims 3 and 28 and claims 4 and 29 contain identical limitations.

5. Claims 5-8 are objected Claims 5-8 are objected to because of the following informalities: because it appear that added limitation "two or more memory sections" and "each memory section includes two or more TLBs" contains subject matter which

was not described in the specification at the time the application was filed, had possession of the claimed invention. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 8 and 1 are rejected under 35 U.S.C. 102(b) as being anticipated by Teller et al. (Teller) "Locating Multiprocessor TLBs at Memory", Proceeding of the Twenty-Seventh Annual Hawaii International Conference on System Science, 1994, pp 554-563.

As to claim 8, Teller discloses the claimed limitation. Teller discloses an information-handling system (Fig. 3) comprising: a memory having two or more section (Fig. 3 memory clusters) wherein each memory section includes two or more translation look aside buffers (Fig. 3 TLBs and section 3.2 & page 554, TLBs are located at processor or memory) and a plurality of processing elements (Fig. 3 Processors), wherein each of the processing elements is operatively coupled to the memory, wherein the memory includes mapping means includes a first TLB for a first processor and a first TLB for a first processor (Fig. 3).

As to claim 1, Teller discloses an information-handling system, comprising: a plurality of processing elements (Fig. 3 Processors); a plurality of memory sections (Fig. 3, memory cluster and page 554, TLBs are located at processor or memory), wherein each memory section comprises: a memory array (Fig. 3 Memory clusters) having a plurality of locations; a memory interface (Fig. 3) operatively connecting the memory array to each of the processing elements; and a processor translation look-aside buffer (Fig. 3 Ref. TLB and section 3.2), wherein the processor translation look-aside buffer is operatively coupled to the memory array and to one of the processing elements in order to translate addresses received from the processing elements, and wherein the processor translation look-aside buffer has a plurality of entries, the plurality of entries being used to map a processor address into a memory array address of the memory array (Fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teller et al. (Teller) "Locating Multiprocessor TLBs at Memory", Proceeding of the

Twenty-Seventh Annual Hawaii International Conference on System Science, 1994, pp 554-563 in view of Peck, Jr. et al. (Peck) US Paten No. 6,686,920.

As to claims 4 and 29, Teller discloses the invention as claimed above.

However, Teller does not specifically disclose I/O processor and I/O translation look-aside buffer.

Peck discloses I/O processor (Fig. 2 AGP and PCI) and each I/O translation look-aside buffer (Fig. 2 Ref. 60C and 60d) for the purpose of providing an I/O capability thereby increase system bandwidth by distributing the workload.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add I/O processor and I/O translation look-aside buffer as taught by Peck into the system of Teller for the advantages stated above.

8. Claims 2, 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teller et al. (Teller) "Locating Multiprocessor TLBs at Memory", Proceeding of the Twenty-Seventh Annual Hawaii International Conference on System Science, 1994, pp 554-563 in view of Herrell et al. (Herrell) US Paten No. 5,301,287.

As to claim 2, Teller discloses an information-handling system, comprising: a plurality of processing elements (Fig. 3 Processors); a plurality of memory sections (Fig. 3, memory cluster and page 554, TLBs are located at processor or memory), wherein each memory section comprises: a memory array (Fig. 3 Memory clusters) having a plurality of locations; a memory interface (Fig. 3) operatively connecting the memory array to each of the processing elements; and a processor translation look-

aside buffer (Fig. 3 Ref. TLB and section 3.2), wherein the processor translation look-aside buffer is operatively coupled to the memory array and to one of the processing elements in order to translate addresses received from the processing elements, and wherein the processor translation look-aside buffer has a plurality of entries, the plurality of entries being used to map a processor address into a memory array address of the memory array (Fig. 3)., however, Teller does not specifically disclose a FIFO.

Herrell discloses memory interface includes a FIFO (col. 7 lines 12-14) for the purpose of providing capability of items in queue or buffer are removed in the same order in which they were added.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the FIFO as taught by Herrell in to the system of Teller for the advantages stated above.

As to claims 3 and 28, Teller and Herrell disclose the invention as claimed above. Herrell further discloses a command FIFO (col. 7 lines 12-14).

Allowable Subject Matter

9. Claims 5-7 are allowable if overcome the claim objections.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. See attached PTO-892.

2. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

3. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).

4. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Kim whose telephone number is (571) 272-4181. The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 whose telephone number is (571) 272-2100.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7. **Any response to this action should be mailed to:**

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to TC-2100:
(703) 872-9306

Hand-delivered responses should be brought to the Customer Service Window (Randolph Building, 401 Dulany Street, Alexandria, VA 22314).

H Kim
Primary Patent Examiner
January 25, 2006

